Operation Manual
Compact 120 K
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1. **Introduction**

With your OERTZEN high pressure cleaner you have purchased one of the most durable and reliable machines available on the market. Its balanced ratio of water flow (temperature) and working pressure perfectly meets all cleaning requirements. The OERTZEN high pressure cleaners conform to all European safety regulations which is guaranteed by the CE symbol.

- This manual to be made available to the operating personnel and to be read completely before start-up. We point out that we cannot be held responsible for any damage or malfunctions as a result of ignoring this manual.

- The machine described in this manual to be inspected every year by qualified personnel. Inspection results to be recorded and to be made available to authorities their on request.

- The packing materials (plastic foil, wood, cardboard boxes, nails etc.) are potentially dangerous, should be kept away from children and disposed according to environmental requirements.

![Warning Symbol]

*This symbol appears at all operating and safety instructions dealing with the dangers for personal entirety and life.*

![Warning Symbol]

*This warning symbol appears in the operating manual at all operating safety instructions dealing with risks due to electric power.*

![Attention Symbol]

*This symbol appears at all operating and safety instructions dealing with the fulfilment of rules, regulations and instructions for the proper operation to avoid destruction of the machine.*

This manual is subject to technical alteration.

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2. **Safety Instructions**

**The following instructions to be followed before, during and after work:**

This instruction manual to be read completely before initial start-up. If strictly followed, no dangers should occur.

This machine must only be run by qualified adult persons who are fully familiar with possible dangers. “Directives for Liquid Blasters” (ZH 1/406) and operation instructions “Working with Liquid Blasters” (BGV D 15) to be followed.

The machine is not suitable for unattended operation and must be operated according to specification. Protective clothing to be worn.

The water jet emerging from the spray pistol has a dangerous cutting effect. Therefore the water jet must never be directed onto persons, animals or electrical installations. It must never be used for cleaning of clothes, footwear and the like. Be aware of torque and recoil. Ensure stable foothold.

The max. allowed pressure which is stated on the type plate must not be exceeded. The safety/control valve opens, if the max. operating pressure is exceeded by more than 10 % and returns the water back into the suction side of the high pressure pump. The safety/control valve is workshop-set and sealed. Adjustment must not be changed.

Oil heated high pressure cleaners must not be run indoors, in case exhaust gas evacuation is not guaranteed. Carbon monoxide is lethal.

Worn-out or damaged high pressure hoses must never be repaired and reused but to be replaced by original OERTZEN equipment.

Unsuitable respectively defective high pressure hoses cause severe accidents during operation. Therefore high pressure hoses to be carefully inspected before start-up and replaced by original OERTZEN equipment in case of damage. Use of other than original OERTZEN equipment results in expiry of the EC Declaration of Conformity, as well as product liability and warranty.

Spray pistols with delayed closing mechanism must not be used because of risk of injuries.

Lever in open position must never be blocked or fixed in any way.

Use of spray wands of a length below 750 mm is prohibited.

The machine must not be run in areas jeopardized by fire or explosions. During operation at filling stations “Technical for flammable liquids” (TfbF) to be observed.

Consumables to be handled thoroughly according to technical rules and safety and environmental regulations to be observed.

Machine must not be started, if power cable, plug, switches, etc. are defective.

Only extension cables designed according to VDE to be used. Extension cables on reels to be reeled off during operation in order to avoid overheating of the reel. Plug, couplings to be watertight. A faulty current protection switch to be added.
Before opening the machine in case of malfunction or emergency, switch off by means of the ON/OFF switch and disconnect it from electric power source.

Electric power can cause severe injuries. All symptoms of faulty electric components to be taken seriously and possible causes for accidents to be eliminated immediately. All repair work only to be carried out by qualified service personnel.

Make sure that the machine cannot move. If the machine is equipped with a brake, it must be set during working.

Repair work in the high pressure section of the machine (pump, hoses, piping) only to be carried out by qualified personnel.

Exhaust gas piping is getting hot during operation. Do not touch!

During loading hoisting device to be fastened properly at jack rings. Ensure balanced load distribution.

After work the machine to be locked and secured against unauthorized/accidental operation by means of the safety lever.

For immission control purposes oil heated high pressure cleaners to pass a yearly immission value test, results of which to be recorded.

Use of equipment and/or consumables which is not delivered or expressively approved by OERTZEN results in expiry of the EC Declaration of Conformity, as well as product liability and warranty.
3. **Design/Configuration/Illustration**

The hot water cleaners of this series mainly comprise a low speed high pressure inline plunger pump incl. of safety shut-down system and a high performance oil heating unit with vertical double-shell stainless steel heat exchanger.

The high pressure inline plunger pump is directly flanged to the electric motor. It directs the feed water via strainer and a safety/control unit into the heating coil, where the water is heated up to required working temperature. A sealed safety/control valve which is arranged between high pressure pump and heating coil opens as soon the max. operating pressure is exceeded by 10% and returns the water which cannot be taken by the nozzle back into the suction line of the high pressure pump.

By means of the burner/thermostat switch fuel supply from internal fuel tank can be activated. The fuel pump directs the fuel via a filter into the burner chamber. The oxygen required for the burning process is generated by a blower system and pressed into the burner chamber; here the mixture is atomised and ignited by ignition electrodes which are supplied with continuous voltage by a high voltage transformer. The flame is totally burning inside the burner chamber without touching the heat exchanger shells at high efficiency. The infra-red rays generated by this process and hot exhaust fumes economically heat up the water flowing through the heating coil to the temperature adjusted at the thermostat. At the high pressure outlet the hot water enters the high pressure hose, spray lance and spray nozzle and is pressurised to required working pressure determined by the nozzle diameter.

If required, the working pressure can be reduced at the Vario Jet nozzle and detergent can be fed into the water stream at low pressure.

The machine is equipped with a circulation shut-down system. When closing the spray pistol the machine, the safety/control which is arranged downstreams of the high pressure pump returns the water to the suction line. In parallel a safety/control unit interrupts the fuel supply to the burner so that it is stopped. When releasing the spray pistol again, the machine and burner restart and pressure is generated immediately so that work can be continued without delay.

A wide range of accessories which allow to increase the efficiency of the machine is available. Contact OERTZEN or your local dealer for details.
4. **Start-up/Shut-down**

**Before Start-up**

Read operation manual and follow instructions.

Upon start-up of the high pressure cleaner indoors, proper ventilation and exhaust evacuation to be guaranteed. Relevant safety regulations to be followed.

In order to guarantee proper condition of the machine and trouble-free operation, carry out the following checks before start-up:

- General condition of the unit (connections, seals, etc.)
- Power cables/connections
- Check all hoses for damage
- Air supply to be ensured
- Fill in all consumables required
- Check correct oil level of high pressure pump (dip stick), only oil qualities approved by OERTZEN to be used (OERTZEN OSP special pump oil).
- Check high pressure pump/pump connections for leaks
- Machine only to be run with absolutely clean water. Thoroughly flush water supply hose before connection. Depending on water quality, filter to be checked in regular short intervals and replaced whenever needed.
- Machine to be run horizontally (+/- 5°)

In order to guarantee proper condition of the machine and trouble-free operation, carry out the following checks during operation:

- Observe control indications/devices whether functioning
- Observe pressure whether varying
- Observe high pressure pump, hoses, connections whether leaking
- Observe abnormal noise

In case of malfunctions switch off machine immediately, eliminate cause according to chapter "Trouble Shooting", call qualified service.

**Connections**

**Water Connection**

Water inlet (6) of the unit to be connected to the water distribution network by means of an internally clean, min. ¾” water hose (diameter: see table below). For connections to the potable water distribution network DIN 1988 to be considered (for short-time connection a back-flow preventer with non-return protection and ventilation to be used).

<table>
<thead>
<tr>
<th>Flow Pressure</th>
<th>Flow Rate minimum *</th>
</tr>
</thead>
<tbody>
<tr>
<td>minimum: 2 bar</td>
<td>≥ 15 l/min. ¾” supply hose</td>
</tr>
<tr>
<td>maximum: 8 bar</td>
<td>≥ 21 l/min. 1” supply hose</td>
</tr>
<tr>
<td></td>
<td>≥ 30 l/min. 1 ¼” supply hose</td>
</tr>
</tbody>
</table>

* see Technical Data

**Attention!**

Water shortage may cause severe damages on the pump unit (cavitation).
**Electric Connection**
Connect the unit to a 230 V power source which is protected by 16 A (slow). Extension cables to have a diameter according to VDE regulations. Extension cables on reels to be reeled off completely, in order to avoid overheating of the cable reel. Plugs, couplings to be water-proof. A faulty current protection switch is recommended. VDE regulations apply.

**High Pressure Connection**
High pressure hose to be connected to high pressure outlet (11) of the machine by means of the hand nut without using tools.

**Fuel Tank Filling**
Fill fuel tank (18) with clean fuel according to DIN 51603, part 1 or Diesel. Ensure absolute cleanliness during transport and filling. Tank to be properly closed after filling.

**Detergent Tank Filling (not included – to be provided by client)**
Fill detergent tank with non-hazardous detergent. When using powders, these have to be mixed in a separate tank before being filled into the detergent tank of the machine. Tank to be properly closed after filling.

**Operation**
Open water source.

Unlock and release spray pistol, bleed the unit until blister-free water emerges.

Push ON/OFF switch (2).

Adjust burner/thermostat switch (23) to required working temperature.

Carry out cleaning task.

⚠️ **Be aware of recoil / ensure stable foothold. Observe hot exhaust fumes.**

Model Compact 120 K is equipped with a circulation shut-down system. Do not run the machine with closed pistol for more than 3 minutes, as damage of the high pressure pump may be the result. During working breaks the machine to be electrically switched off.
Detergent Dosing

**Attention!**

Only detergents approved by OERTZEN to be used. Use of hazardous detergents or detergents not approved by OERTZEN ceases warranty and product liability.

Depending of kind and composition of detergent, it can be used in cold and hot water mode. Observe manufacturer's instructions.

Do not spray detergents on hot surfaces or in direct sunlight. Detergent must not dry.

Detergent will be fed into the water stream from an external tank (to be provided by client) by opening the Vario Jet nozzle and applied onto the cleaning object at low pressure.

Put detergent suction hose into detergent tank so that the hose end (filter) touches the tank bottom.

**Turn Vario Jet nozzle counter-clockwise:**
Detergent supply **ON** – low working pressure.

**Turn Vario Jet nozzle clockwise:**
Detergent supply **OFF** – high working pressure.

Apply detergent onto cleaning object from the bottom to the top and let it work in but not dry. Close Vario Jet nozzle and systematically wash the cleaning object from the bottom to the top. Keep a spray distance of approx. 10 – 20 cm. Detergent residues to be washed completely from the cleaning object.

**Attention!**

After use of detergents, detergent line to be rinsed unless no detergent is detected in the water stream.
After Completion of Work
Switch off burner/thermostat switch (23) – pos. "0". Run machine in cold water mode for a couple of minutes.

Close spray pistol.

The unit to be switched off by means of the ON/OFF switch (2) – pos. "0".

De-pressurise the spray pistol by shortly opening and closing.

Disconnect the unit from the water and power sources.

Reel off high pressure hose and thoroughly clean it. In case of damage replace it for safety reasons.

Using other materials than original OERTZEN equipment (hand nut respectively hose marked with “OERTZEN”) or using materials which have not expressively been approved by OERTZEN in writing ceases warranty and product liability.

Reel up high pressure hose properly, without loops.

Store equipment in a dry, frost-protected area.

In case of extended shut-down periods drain pump completely.

Particularly Note
In case of malfunctions switch off machine immediately, eliminate cause according to chapter “Trouble Shooting”, call qualified service.

During shut-down periods of more than 3 minutes switch off machine by means of the ON/OFF switch (2) – pos. "0".

If frost is likely, frost protection of the machine is a must, as otherwise severe damage could occur.

After work the spray pistol to be locked by means of the safety lever.
5. **Maintenance and Care**

*Every machine is only as reliable as its maintenance personnel.*

It is most important that the operator carries out the following maintenance work in shorter time periods than the normal maintenance intervals:

**High Pressure Pump**
First oil change to be carried out after 50 operating hours, further oil changes due every 500 operating hours, however, min. once a year. Only OERTZEN OSP special pump oil to be use. Take care that waste oil will be treated as per regulations. In case the pump oil becomes turbid, carry out oil change immediately. If oil becomes turbid again, do not operate the unit any longer. Call qualified service.

**Strainer**
A strainer (6) is installed at the water inlet which has to be checked prior to start-up and cleaned/replaced whenever necessary.

**Fuel Filter**
Between fuel pump and fuel tank a filter is installed which has to be cleaned/replaced regularly.

**Fuel Pump**
Strainer of fuel pump (22) to be cleaned/replaced regularly.
**Fuel Tank**
Immediately remove dirt deposits in the fuel tank (19), if any.

**Boiler Cleaning**
If soot is detected in the unit, stop operation at once (danger of explosion). Clean heating coil and pre-heater as required, at least as soon as soot deposits are being found on the heating coil or soot is detected in the exhaust fumes.

The boiler cleaning and the adjustment of the burner unit afterwards to be carried out by qualified service.

**Removal of Mineral Deposits**
In spite of constant load of the heating surface at a low level, heating of water results in a certain formation of mineral deposits (scaling) which should frequently be removed.

Therefore, weekly dismantle the spray nozzle from the spray lance and run the unit without nozzle. If the pressure indicated on the pressure gauge exceeds 5 bar, carry out the following procedure:

**The anti-scalant is an acid, i.e. corrosive!**
**Therefore, protective clothing/mask/gloves to be put on!**

- Open Vario Jet nozzle (counter-clockwise).
- Put detergent suction hose into vessel with 6 l OERTZEN anti-scalant ORM1.
- Run machine until all anti-scalant liquid is consumed and let it work in for approx. 30 minutes.
- Remove detergent suction hose from tank and close Vario Jet nozzle (clockwise).
- Start machine and flush anti-scalant out of the machine until clean water emerges.

**Attention!**
Anti-scalant liquid to be collected and dumped according to environmental regulations.
## Maintenance Intervals

<table>
<thead>
<tr>
<th>Works to be carried out</th>
<th>to be cleaned/replaced by operators</th>
<th>to be carried out by qualified service minimum every (operating hours)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>50 hrs.</td>
</tr>
<tr>
<td>Power cable/plugs</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High pressure hose/connections</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pump oil OSP</td>
<td></td>
<td></td>
</tr>
<tr>
<td>First oil change pump</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Further oil changes pump</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Strainer</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Fuel filter</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Fuel pump (strainer)</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Fuel tank</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Heat exchanger</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Heating coil *</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Ignition electrodes</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Burner nozzle</td>
<td></td>
<td>⊕</td>
</tr>
<tr>
<td>Annual test</td>
<td></td>
<td>⊕</td>
</tr>
</tbody>
</table>

⊕ = change/replace
 STATS = clean
● = carry out
* = probably necessary in shorter intervals, depending on water hardness/working pressure

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All maintenance intervals stated apply under the provision that the machine will be operated according to design limits and that the machine will be fed with clean water/consumables. Otherwise maintenance intervals to be shortened.

Only original OERTZEN spare parts to be used. Otherwise warranty and product liability will be ceased. CE Declaration of Conformity expires.

All maintenance instructions laid down in this manual are part of our warranty terms. Disregarding maintenance instructions ceases warranty.
**Frost Protection**

Frost-protection of the machine is of vital interest, because frost can cause severe damage on the entire system.

The best frost protection is to store the machine/accessories in a permanently frost-protected area.

If there is a risk of temperatures below freezing point during storage and/or transportation, the machine to be frost-protected as follows:

- Fill approx. 2 l of a commercial anti-freeze (e.g. Glysantin) into a separate tank.
- Put water supply hose ¾” into the tank.
- Start machine, open spray pistol and direct the anti-freeze back into the tank, so circulating it through the entire system
- Spray pistol/stop valve to be opened and closed several times until anti-freeze can be detected in the water stream.
- Stop machine, lock spray pistol, disconnect water supply and high pressure hoses
- Machine is now protected against temperatures of –25 °C.

**Attention!**

Disregarding of frost-protection instructions can cause severe damage on the entire system.

Anti-freeze liquid to be collected for re-use, respectively to be dumped properly according to safety regulations.
6. Electric Wiring Diagram

7. Technical Data

<table>
<thead>
<tr>
<th>Technical Data</th>
<th>Compact 120 K</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate/adjustable</td>
<td>540 l/h</td>
</tr>
<tr>
<td>Unloading pressure *</td>
<td>140 bar</td>
</tr>
<tr>
<td>max. Working pressure/adjustable</td>
<td>120 bar</td>
</tr>
<tr>
<td>Water temperature/adjustable</td>
<td>30 – 90 °C</td>
</tr>
<tr>
<td>Voltage</td>
<td>1 ~ 230 V</td>
</tr>
<tr>
<td>Total power connected</td>
<td>2,4 kW</td>
</tr>
<tr>
<td>Power consumption</td>
<td>10,5 A</td>
</tr>
<tr>
<td>Heating capacity</td>
<td>42 kW</td>
</tr>
<tr>
<td>Fuel consumption</td>
<td>3,8 kg/h</td>
</tr>
<tr>
<td>Spray nozzle</td>
<td>adjusting nozzle 035 Ssyst</td>
</tr>
<tr>
<td>Recoil **</td>
<td>21 N</td>
</tr>
<tr>
<td>Noise level Lp/Lw ***</td>
<td>77 / 93 dB(A)</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>720 x 500 x 600 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>75 kg</td>
</tr>
<tr>
<td>Order No.</td>
<td>10.000.120</td>
</tr>
</tbody>
</table>

* Setpoint of unloading valve
** Depending on length and angle of spray lance, torque to be controlled by firm grip.
*** According to DIN EN ISO 3744

Standard equipment: Circulation shut-down system, fuel tank, 10 m high pressure hose, insulated spray pistol
Subject to technical alteration.
8. **Trouble Shooting**

Electricity can cause severe injuries. Electrical components thoroughly and frequently to be checked for damages and malfunctions, in order to avoid any cause for accidents. Disconnect the unit from the electrical network during all repair/maintenance work (ZH 1/95).

**Trouble Shooting: - only to be carried out by qualified service personnel.**

<table>
<thead>
<tr>
<th>Malfunction</th>
<th>Cause/Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit does not start.</td>
<td>Switch on main switch.</td>
</tr>
<tr>
<td></td>
<td>Insert plug.</td>
</tr>
<tr>
<td></td>
<td>Check fuse.</td>
</tr>
<tr>
<td></td>
<td>Check proper voltage.</td>
</tr>
<tr>
<td></td>
<td>Electr. motor overloaded. Cool down.</td>
</tr>
<tr>
<td></td>
<td>Stop the unit – call qualified service.</td>
</tr>
<tr>
<td>Unit stops during operation.</td>
<td>Check/replace fuse.</td>
</tr>
<tr>
<td></td>
<td>Switch on main switch again.</td>
</tr>
<tr>
<td></td>
<td>Clean/replace nozzle.</td>
</tr>
<tr>
<td></td>
<td>Electr. motor overloaded. Cool down.</td>
</tr>
<tr>
<td></td>
<td>Stop the unit – call qualified service.</td>
</tr>
<tr>
<td>Operating pressure low/varies</td>
<td>Check water supply, check filter.</td>
</tr>
<tr>
<td></td>
<td>Bleed unit.</td>
</tr>
<tr>
<td></td>
<td>Fill detergent tank.</td>
</tr>
<tr>
<td></td>
<td>Clean water filter.</td>
</tr>
<tr>
<td></td>
<td>Remove scaling.</td>
</tr>
<tr>
<td></td>
<td>Clean/replace spray nozzle.</td>
</tr>
<tr>
<td></td>
<td>Tighten suction hose.</td>
</tr>
<tr>
<td></td>
<td>Clean/replace pump valves.</td>
</tr>
<tr>
<td></td>
<td>Stop the unit – call qualified service.</td>
</tr>
<tr>
<td>Vibrations on high pressure hose</td>
<td>Bleed unit.</td>
</tr>
<tr>
<td>pistol</td>
<td>Fill detergent tank.</td>
</tr>
<tr>
<td></td>
<td>Stop the unit – call qualified service.</td>
</tr>
<tr>
<td>No detergent dosing.</td>
<td>Open detergent adjusting nozzle.</td>
</tr>
<tr>
<td></td>
<td>Fill detergent tank.</td>
</tr>
<tr>
<td></td>
<td>Clean filter in suction hose.</td>
</tr>
<tr>
<td>Burner does not start.</td>
<td>Refill fuel tank.</td>
</tr>
<tr>
<td>Temperature not achieved.</td>
<td>Correct thermostat adjustment.</td>
</tr>
<tr>
<td></td>
<td>Clean fuel filter.</td>
</tr>
<tr>
<td>Excessive exhaust fume formation.</td>
<td>Clean fuel filter.</td>
</tr>
<tr>
<td></td>
<td>Call qualified service.</td>
</tr>
</tbody>
</table>
EC-Konformitätserklärung
Declaration of Conformity

Geräteart: Ölbereitetes Hochdruck-Reinigungssystem
Description: Oil heated high-pressure cleaning system

Gerätytyp: Compact 120 K (Elektromotor / electric drive, 1~230 V/50 Hz) 120 bar
Model:

Serie Nr.: Serial No.: 

Wir bestätigen, daß das oben genannte Erzeugnis nachfolgenden Anforderungen entspricht:
We hereby declare that above mentioned product is in conformity with the following provisions:

- EG-Maschinenrichtlinie
- EG-Niederspannungsrichtlinie
  EC-Low Voltage Directive 73 / 23 EG (93 / 70)
- EG-Richtlinie EMV
  EC-EMC Directive 89 / 336 EG (92 / 31) (93 / 68)
- ZH 1/466 (RAI)
- EN 292 Teil 1 und 2

X EN 55014 □ EN 60335-2-67
□ EN 50081-1 □ EN 60335-2-69
X EN 60335-2-79 □ EN 60335-2-72
□ EN 1829

Bei nicht von uns genehmigten Änderungen der Maschine verliert diese Erklärung ihre Gültigkeit.
This declaration is ceased in case of alterations of the product not approved by us.


[Signature]
Technischer Leiter/Technical Manager
ARNDT H. von OERTZEN (GmbH & Co)

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